

ET033384921US #3  
4-23-02

Practitioner's Docket No. 00109

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Patent application of: Michio TANIMOTO, Hideto HASHIBA

for *FIXED-BED SHELL-AND-TUBE REACTOR AND ITS USAGE*, the specification of which is being transmitted herewith.



Box Patent Application  
Assistant Commissioner for Patents  
Washington, D.C. 20231

INFORMATION DISCLOSURE STATEMENT

Section 1. Forms PTO/SB/08A and 08B (substitute for Form PTO-1449)

Attached please find six substitute PTO-1449 forms.

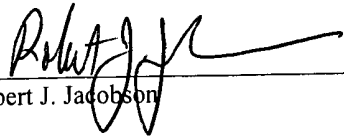
Section 2. Copies of Listed Information Items Accompanying This Statement

Legible copies of all items listed on the PTO-1449 forms accompany this information statement. These items are:

U.S. Patent Documents

|    |            |                  |            |
|----|------------|------------------|------------|
| 1  | 4,077,530  | Fukusen et al.   | 03/07/1978 |
| 3  | 4,402,349  | Engert et al.    | 09/06/1983 |
| 4  | 4,461,327  | Magin et al.     | 07/24/1984 |
| 5  | 4,812,437  | Nojiri et al.    | 03/14/1989 |
| 7  | 5,395,812  | Nagase et al.    | 03/07/1995 |
| 8  | 5,504,052  | Rizkalla et al.  | 04/02/1996 |
| 9  | 5,145,824  | Buffum et al.    | 09/08/1992 |
| 14 | 4,537,874  | Sato et al.      | 08/27/1985 |
| 15 | Re. 29,901 | Wada et al.      | 02/06/1979 |
| 18 | 5,959,143  | Sugi et al.      | 09/28/1999 |
| 20 | 4,707,460  | Ishii et al.     | 11/17/1987 |
| 22 | 5,169,820  | Ueda et al.      | 12/08/1992 |
| 24 | 4,760,153  | Takahashi et al. | 07/26/1988 |
| 25 | 5,959,124  | Hashiba et al.   | 09/28/1999 |
| 31 | 5,994,580  | Takahashi et al. | 11/30/1999 |

I hereby certify that this correspondence and the documents referred to as enclosed therein are being deposited with the United States Postal Service on this date January 6, 2002 in an envelope as "Express Mail Post Office to Addressee" Mailing Number ET033384921US addressed to Assistant Commissioner for Patents, Washington, D.C. 20231.

  
Robert J. Jacobson

(Information Disclosure Statement--Page 1 of 6)

|    |           |                  |            |
|----|-----------|------------------|------------|
| 31 | 6,060,422 | Takahashi et al. | 05/09/2000 |
| 32 | 4,837,360 | Kadowaki et al.  | 06/06/1989 |
| 33 | 3,801,634 | Krabetz et al.   | 04/02/1974 |
| 34 | 5,198,581 | Kawajiri et al.  | 03/30/1993 |
| 35 | 5,719,318 | Kawajiri et al.  | 02/17/1998 |

### Foreign Patent Documents

|    |    |           |    |                         |            |
|----|----|-----------|----|-------------------------|------------|
| 1  | JP | 52-3579   |    | Sumitomo Chemical       | 01/12/1977 |
| 2  | JP | 62-30545  | A  | Mitsubishi Heavy Ind.   | 02/09/1987 |
| 3  | JP | 55-67325  | A  | BASF Aktiengesellschaft | 05/21/1980 |
| 4  | JP | 57-21928  |    | BASF Aktiengesellschaft | 02/04/1982 |
| 5  | JP | 63-116743 |    | Mitsubishi Petrochem    | 05/21/1988 |
| 6  | JP | 62-4444   | A  | Shell Internationale    | 01/10/1987 |
| 6  | EP | 0 207 550 | B1 | Shell Internationale    | 01/07/1987 |
| 7  | JP | 5-329368  | A  | Nippon Shokubai         | 12/14/1993 |
| 8  | JP | 10-510212 | A  | Scientific Design       | 10/06/1998 |
| 9  | JP | 5-84440   | A  | Shell Oil Company       | 04/06/1993 |
| 10 | JP | 50-13308  | B  | Mitsubishi Rayon        | 02/12/1975 |
| 10 | GB | 1 444 659 |    | Mitsubishi Rayon        | 08/04/1976 |
| 11 | JP | 64-56634  | A  | Nippon Shokubai         | 03/03/1989 |
| 11 | EP | 0 304 867 | A2 | Nippon Shokubai         | 03/01/1989 |
| 12 | JP | 56-52013  | B2 | Standard Oil Co.        | 12/09/1981 |
| 12 | GB | 1 330 074 |    | Standard Oil Co.        | 09/12/1973 |
| 13 | JP | 56-23969  | B2 | Standard Oil Co.        | 06/03/1981 |
| 13 | GB | 1 390 271 |    | Standard Oil Co.        | 04/09/1975 |
| 14 | JP | 59-76541  |    | Nippon Shokubai         | 05/01/1984 |
| 15 | JP | 49-11371  |    | Nippon Shokubai         | 03/16/1974 |
| 16 | JP | 52-85091  |    | Standard Oil Co.        | 07/15/1977 |
| 16 | GB | 1 566 882 |    | Standard Oil Co.        | 05/08/1980 |
| 17 | JP | 6-279030  | A  | Tenten et al.           | 10/04/1994 |
| 17 | CA | 2,114,681 | A1 | Tenten et al.           | 08/04/1994 |
| 18 | JP | 8-299797  | A  | Nippon Kayaku           | 11/19/1996 |
| 19 | JP | 60-33539  | B2 | Nippon Shokubai         | 08/03/1985 |
| 19 | EP | 0 043 100 | B2 | Nippon Shokubai         | 01/06/1982 |
| 20 | JP | 3-26101   | B2 | Mitsubishi Rayon        | 04/09/1991 |
| 21 | JP | 59-12758  | A  | Sumitomo Kagaku         | 01/23/1984 |
| 22 | JP | 7-29056   | B2 | Nippon Shokubai         | 04/05/1995 |
| 23 | JP | 58-15176  |    | BASF Aktiengesellschaft | 03/24/1983 |
| 23 | GB | 1 496 832 |    | BASF Aktiengesellschaft | 01/05/1978 |
| 24 | JP | 62-78     | A  | Nippon Shokubai         | 01/06/1987 |
| 25 | JP | 10-167711 | A  | Nippon Shokubai         | 06/23/1998 |
| 26 | JP | 7-51573   | A  | Mitsubishi Chemical     | 02/28/1995 |
| 26 | EP | 0 608 837 | B1 | Mitsubishi Chemical     | 08/03/1994 |
| 27 | JP | 5-115783  | A  | Mitsui Toatsu           | 05/14/1993 |
| 28 | JP | 50-35088  |    | Chevron Research        | 04/03/1975 |
| 28 | GB | 1 416 099 |    | Chevron Research        | 12/03/1975 |
| 29 | JP | 9-316023  | A  | Toagosei Co Ltd         | 12/09/1997 |

|    |    |           |    |                          |            |
|----|----|-----------|----|--------------------------|------------|
| 30 | JP | 10-57813  | A  | Mitsubishi Chem Corp     | 03/03/1998 |
| 31 | JP | 10-120617 | A  | Toagosei Co., Ltd.       | 05/12/1998 |
| 32 | JP | 63-38331  | B2 | Mitsubishi Petrochemical | 07/29/1988 |
| 33 | JP | 53-30688  |    | BASF Aktiengesellschaft  | 08/29/1978 |
| 34 | JP | 4-217932  | A  | Nippon Shokubai          | 08/07/1992 |
| 35 | JP | 9-241209  | A  | Nippon Shokubai          | 09/16/1997 |
| 36 | JP | 7-10802   | A  | Sumitomo Chem            | 01/13/1995 |
| 37 | JP | 64-33162  | U  | Mitsubishi Denki         | 03/01/1989 |
| 38 | JP | 3-9770 B2 |    | Nippon Shokubai          | 02/12/1991 |
| 39 | JP | 11-333282 | A  | Sumitomo Chem            | 12/07/1999 |
| 40 | JP | 1-33152   | Y2 | Mitsui Toatsu            | 10/09/1989 |

#### Other Prior Art -- Non Patent Literature Documents

None.

#### Section 3. Concise Explanation of Non-English Language List Information Items

A concise explanation of the relevance of the following foreign documents is found in the respective English abstract or English partial translation attached thereto:

|    |    |           |    |                       |            |
|----|----|-----------|----|-----------------------|------------|
| 2  | JP | 62-30545  | A  | Mitsubishi Heavy Ind. | 02/09/1987 |
| 21 | JP | 59-12758  | A  | Sumitomo Kagaku       | 01/23/1984 |
| 27 | JP | 5-115783  | A  | Mitsui Toatsu         | 05/14/1993 |
| 29 | JP | 9-316023  | A  | Toagosei Co Ltd       | 12/09/1997 |
| 30 | JP | 10-57813  | A  | Mitsubishi Chem Corp  | 03/03/1998 |
| 36 | JP | 7-10802   | A  | Sumitomo Chem         | 01/13/1995 |
| 37 | JP | 64-33162  | U  | Mitsubishi Denki      | 03/01/1989 |
| 38 | JP | 3-9770 B2 |    | Nippon Shokubai       | 02/12/1991 |
| 39 | JP | 11-333282 | A  | Sumitomo Chem         | 12/07/1999 |
| 40 | JP | 1-33152   | Y2 | Mitsui Toatsu         | 10/09/1989 |

#### Section 4. Cumulative Patents or Publications

The references within the following sets of references are members of the same patent family and are believed to be cumulative of each other. Copies of all references are being submitted.

|   |    |           |   |                         |            |
|---|----|-----------|---|-------------------------|------------|
| 1 | JP | 52-3579   |   | Sumitomo Chemical       | 01/12/1977 |
| 1 | US | 4,077,530 |   | Fukusen et al.          | 03/07/1978 |
| 3 | JP | 55-67325  | A | BASF Aktiengesellschaft | 05/21/1980 |
| 3 | US | 4,402,349 |   | Engert et al.           | 09/06/1983 |
| 4 | JP | 57-21928  |   | BASF Aktiengesellschaft | 02/04/1982 |
| 4 | US | 4,461,327 |   | Magin et al.            | 07/24/1984 |

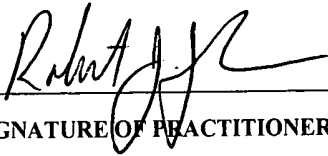
|    |    |            |    |                      |            |
|----|----|------------|----|----------------------|------------|
| 5  | JP | 63-116743  |    | Mitsubishi Petrochem | 05/21/1988 |
| 5  | US | 4,812,437  |    | Nojiri et al.        | 03/14/1989 |
| 6  | JP | 62-4444    | A  | Shell Internationale | 01/10/1987 |
| 6  | EP | 0 207 550  | B1 | Shell Internationale | 01/07/1987 |
| 7  | JP | 5-329368   | A  | Nippon Shokubai      | 12/14/1993 |
| 7  | US | 5,395,812  |    | Nagase et al.        | 03/07/1995 |
| 8  | JP | 10-510212  | A  | Scientific Design    | 10/06/1998 |
| 8  | US | 5,504,052  |    | Rizkalla et al.      | 04/02/1996 |
| 9  | JP | 5-84440    | A  | Shell Oil Company    | 04/06/1993 |
| 9  | US | 5,145,824  |    | Buffum et al.        | 09/08/1992 |
| 10 | JP | 50-13308   | B  | Mitsubishi Rayon     | 02/12/1975 |
| 10 | GB | 1 444 659  |    | Mitsubishi Rayon     | 08/04/1976 |
| 11 | JP | 64-56634   | A  | Nippon Shokubai      | 03/03/1989 |
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| 13 | JP | 56-23969   | B2 | Standard Oil Co.     | 06/03/1981 |
| 13 | GB | 1 390 271  |    | Standard Oil Co.     | 04/09/1975 |
| 14 | JP | 59-76541   |    | Nippon Shokubai      | 05/01/1984 |
| 14 | US | 4,537,874  |    | Sato et al.          | 08/27/1985 |
| 15 | JP | 49-11371   |    | Nippon Shokubai      | 03/16/1974 |
| 15 | US | Re. 29,901 |    | Wada et al.          | 02/06/1979 |
| 16 | JP | 52-85091   |    | Standard Oil Co.     | 07/15/1977 |
| 16 | GB | 1 566 882  |    | Standard Oil Co.     | 05/08/1980 |
| 17 | JP | 6-279030   | A  | Tenten et al.        | 10/04/1994 |
| 17 | CA | 2,114,681  | A1 | Tenten et al.        | 08/04/1994 |
| 18 | JP | 8-299797   | A  | Nippon Kayaku        | 11/19/1996 |
| 18 | US | 5,959,143  |    | Sugi et al.          | 09/28/1999 |
| 19 | JP | 60-33539   | B2 | Nippon Shokubai      | 08/03/1985 |
| 19 | EP | 0 043 100  | B2 | Nippon Shokubai      | 01/06/1982 |
| 20 | JP | 3-26101    | B2 | Mitsubishi Rayon     | 04/09/1991 |
| 20 | US | 4,707,460  |    | Ishii et al.         | 11/17/1987 |

|    |    |           |    |                          |            |
|----|----|-----------|----|--------------------------|------------|
| 22 | JP | 7-29056   | B2 | Nippon Shokubai          | 04/05/1995 |
| 22 | US | 5,169,820 |    | Ueda et al.              | 12/08/1992 |
| 23 | JP | 58-15176  |    | BASF Aktiengesellschaft  | 03/24/1983 |
| 23 | GB | 1 496 832 |    | BASF Aktiengesellschaft  | 01/05/1978 |
| 24 | JP | 62-78 A   |    | Nippon Shokubai          | 01/06/1987 |
| 24 | US | 4,760,153 |    | Takahashi et al.         | 07/26/1988 |
| 25 | JP | 10-167711 | A  | Nippon Shokubai          | 06/23/1998 |
| 25 | US | 5,959,124 |    | Hashiba et al.           | 09/28/1999 |
| 26 | JP | 7-51573   | A  | Mitsubishi Chemical      | 02/28/1995 |
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| 28 | JP | 50-35088  |    | Chevron Research         | 04/03/1975 |
| 28 | GB | 1 416 099 |    | Chevron Research         | 12/03/1975 |
| 31 | JP | 10-120617 | A  | Toagosei Co., Ltd.       | 05/12/1998 |
| 31 | US | 5,994,580 |    | Takahashi et al.         | 11/30/1999 |
| 31 | US | 6,060,422 |    | Takahashi et al.         | 05/09/2000 |
| 32 | JP | 63-38331  | B2 | Mitsubishi Petrochemical | 07/29/1988 |
| 32 | US | 4,837,360 |    | Kadowaki et al.          | 06/06/1989 |
| 33 | JP | 53-30688  |    | BASF Aktiengesellschaft  | 08/29/1978 |
| 33 | US | 3,801,634 |    | Krabetz et al.           | 04/02/1974 |
| 34 | JP | 4-217932  | A  | Nippon Shokubai          | 08/07/1992 |
| 34 | US | 5,198,581 |    | Kawajiri et al.          | 03/30/1993 |
| 35 | JP | 9-241209  | A  | Nippon Shokubai          | 09/16/1997 |
| 35 | US | 5,719,318 |    | Kawajiri et al.          | 02/17/1998 |

#### **Section 5. Identification of Person Making This Information Disclosure Statement**

The person making this certification is: the practitioner who signs below on the basis of the information supplied by an individual associated with the filing and prosecution of this

application.

  
SIGNATURE OF PRACTITIONER

Reg. No. 32,419

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ET033384921U5

PTO/SB/08A (10-96)  
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Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

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| <b>INFORMATION DISCLOSURE<br/>STATEMENT BY APPLICANT</b><br><br>(use as many sheets as necessary) |                        | Application Number       | OF EVEN DATE    |
|   |                        | Filing Date              | OF EVEN DATE    |
|   |                        | First Named Inventor     | Michio TANIMOTO |
|   |                        | Group Art Unit           |                 |
|   |                        | Examiner Name            |                 |
| Sheet 1 of 6  | Attorney Docket Number | 00109                    |                 |

PTO  
10/04/97  
01/06/02

| U.S. PATENT DOCUMENTS |                       |                      |                                      |   |  |   |
|-----------------------|-----------------------|----------------------|--------------------------------------|---|--|---|
| Examiner Initials*    | Cite No. <sup>1</sup> | U.S. Patent Document |                                      | Name of Patentee or Applicant of Cited Document | Date of Publication of Cited Document MM-DD-YYYY | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear |
|                       |                       | Number               | Kind Code <sup>2</sup><br>(if known) |   |  |   |
|                       | 1                     | 4,077,530            |                                      | Fukusen et al.                                  | 03/07/1978                                       |   |
|                       | 3                     | 4,402,349            |                                      | Engert et al.                                   | 09/06/1983                                       |   |
|                       | 4                     | 4,461,327            |                                      | Magin et al.                                    | 07/24/1984                                       |   |
|                       | 5                     | 4,812,437            |                                      | Nojiri et al.                                   | 03/14/1989                                       |   |
|                       | 7                     | 5,395,812            |                                      | Nagase et al.                                   | 03/07/1995                                       |   |
|                       | 8                     | 5,504,052            |                                      | Rizkalla et al.                                 | 04/02/1996                                       |   |
|                       | 9                     | 5,145,824            |                                      | Buffum et al.                                   | 09/08/1992                                       |   |
|                       | 14                    | 4,537,874            |                                      | Sato et al.                                     | 08/27/1985                                       |   |
|                       | 15                    | Re. 29,901           |                                      | Wada et al.                                     | 02/06/1979                                       |   |
|                       | 18                    | 5,959,143            |                                      | Sugi et al.                                     | 09/28/1999                                       |   |
|                       | 20                    | 4,707,460            |                                      | Ishii et al.                                    | 11/17/1987                                       |   |
|                       | 22                    | 5,169,820            |                                      | Ueda et al.                                     | 12/08/1992                                       |   |
|                       | 24                    | 4,760,153            |                                      | Takahashi et al.                                | 07/26/1988                                       |   |
|                       | 25                    | 5,959,124            |                                      | Hashiba et al.                                  | 09/28/1999                                       |   |
|                       | 31                    | 5,994,580            |                                      | Takahashi et al.                                | 11/30/1999                                       |   |
|                       | 31                    | 6,060,422            |                                      | Takahashi et al.                                | 05/09/2000                                       |   |
|                       | 32                    | 4,837,360            |                                      | Kadowaki et al.                                 | 06/06/1989                                       |   |
|                       | 33                    | 3,801,634            |                                      | Krabetz et al.                                  | 04/02/1974                                       |   |
|                       | 34                    | 5,198,581            |                                      | Kawajiri et al.                                 | 03/30/1993                                       |   |
|                       | 35                    | 5,719,318            |                                      | Kawajiri et al.                                 | 02/17/1998                                       |   |

| FOREIGN PATENT DOCUMENTS |                       |                         |                     |                                      |   |   |  |                |
|--------------------------|-----------------------|-------------------------|---------------------|--------------------------------------|---|---|--|----------------|
| Examiner Initials*       | Cite No. <sup>1</sup> | Foreign Patent Document |                     |                                      | Name of Patentee or Applicant of Cited Document | Date of Publication of Cited Document<br>MM-DD-YYYY | Pages, Columns, Lines, Where Relevant<br>Passages or Relevant Figures Appear | T <sup>6</sup> |
|                          |                       | Office <sup>3</sup>     | Number <sup>4</sup> | Kind Code <sup>5</sup><br>(if known) |   |   |  |                |
|                          | 1                     | JP                      | 52-3579             |                                      | Sumitomo Chemical                               | 01/12/1977  |  |                |
|                          | 2                     | JP                      | 62-30545            | A                                    | Mitsubishi Heavy Ind.                           | 02/09/1987  |  |                |
|                          | 3                     | JP                      | 55-67325            | A                                    | BASF Aktiengesellschaft                         | 05/21/1980  |  |                |
|                          | 4                     | JP                      | 57-21928            |                                      | BASF Aktiengesellschaft                         | 02/04/1982  |  |                |
|                          | 5                     | JP                      | 63-116743           |                                      | Mitsubishi Petrochem                            | 05/21/1988  |  |                |
|                          | 6                     | JP                      | 62-4444             | A                                    | Shell Internationale                            | 01/10/1987  |  |                |
|                          | 6                     | EP                      | 0 207 550           | B1                                   | Shell Internationale                            | 01/07/1987  |  |                |
|                          | 7                     | JP                      | 5-329368            | A                                    | Nippon Shokubai                                 | 12/14/1993  |  |                |
|                          | 8                     | JP                      | 10-510212           | A                                    | Scientific Design                               | 10/06/1998  |  |                |
|                          | 9                     | JP                      | 5-84440             | A                                    | Shell Oil Company                               | 04/06/1993  |  |                |

|                    |                 |
|--------------------|-----------------|
| Examiner Signature | Date Considered |
|--------------------|-----------------|

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup> Unique citation designation number. <sup>2</sup> See attached Kinds of U.S. Patent Documents. <sup>3</sup> Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>4</sup> For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>5</sup> Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. <sup>6</sup> Applicant is to place a check mark here if English language Translation is attached.

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|   |   |    |   |                          |                 |
|---|---|----|---|--------------------------|-----------------|
| Substitute for form 1449A/PTO<br><br><b>INFORMATION DISCLOSURE<br/>STATEMENT BY APPLICANT</b><br><br><i>(use as many sheets as necessary)</i> |   |    |   | <b>Complete if Known</b> |                 |
|   |   |    |   | Application Number       | OF EVEN DATE    |
|   |   |    |   | Filing Date              | OF EVEN DATE    |
|   |   |    |   | First Named Inventor     | Michio TANIMOTO |
|   |   |    |   | Group Art Unit           |                 |
|   |   |    |   | Examiner Name            |                 |
| Sheet   | 2 | of | 6 | Attorney Docket Number   | 00109           |

[illegible]

| FOREIGN PATENT DOCUMENTS |                          |                         |                     |                                      |  |  |  |                |
|--------------------------|--------------------------|-------------------------|---------------------|--------------------------------------|--|--|--|----------------|
| Examiner<br>Initials*    | Cite<br>No. <sup>1</sup> | Foreign Patent Document |                     |                                      | Name of Patentee or<br>Applicant of Cited Document | Date of Publication of<br>Cited Document<br>MM-DD-YYYY | Pages, Columns, Lines,<br>Where Relevant<br>Passages or Relevant<br>Figures Appear | T <sup>6</sup> |
|                          |                          | Office <sup>3</sup>     | Number <sup>4</sup> | Kind Code <sup>5</sup><br>(if known) |  |  |  |                |
|                          | 10                       | JP                      | 50-13308            | B                                    | Mitsubishi Rayon                                   | 02/12/1975   |  |                |
|                          | 10                       | GB                      | 1 444 659           |                                      | Mitsubishi Rayon                                   | 08/04/1976   |  |                |
|                          | 11                       | JP                      | 64-56634            | A                                    | Nippon Shokubai                                    | 03/03/1989   |  |                |
|                          | 11                       | EP                      | 0 304 867           | A2                                   | Nippon Shokubai                                    | 03/01/1989   |  |                |
|                          | 12                       | JP                      | 56-52013            | B2                                   | Standard Oil Co.                                   | 12/09/1981   |  |                |
|                          | 12                       | GB                      | 1 330 074           |                                      | Standard Oil Co.                                   | 09/12/1973   |  |                |
|                          | 13                       | JP                      | 56-23969            | B2                                   | Standard Oil Co.                                   | 06/03/1981   |  |                |
|                          | 13                       | GB                      | 1 390 271           |                                      | Standard Oil Co.                                   | 04/09/1975   |  |                |
|                          | 14                       | JP                      | 59-76541            |                                      | Nippon Shokubai                                    | 05/01/1984   |  |                |
|                          | 15                       | JP                      | 49-11371            |                                      | Nippon Shokubai                                    | 03/16/1974   |  |                |

|                    |  |                 |  |
|--------------------|--|-----------------|--|
| Examiner Signature |  | Date Considered |  |
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|   |   |    |   | <b>Filing Date</b>            | OF EVEN DATE    |
|   |   |    |   | <b>First Named Inventor</b>   | Michio TANIMOTO |
|   |   |    |   | <b>Group Art Unit</b>         |                 |
|   |   |    |   | <b>Examiner Name</b>          |                 |
| Sheet   | 3 | of | 6 | <b>Attorney Docket Number</b> | 00109           |

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| FOREIGN PATENT DOCUMENTS |                       |                         |                     |                                      |   |   |   |                |
|--------------------------|-----------------------|-------------------------|---------------------|--------------------------------------|---|---|---|----------------|
| Examiner Initials*       | Cite No. <sup>1</sup> | Foreign Patent Document |                     |                                      | Name of Patentee or Applicant of Cited Document | Date of Publication of Cited Document<br>MM-DD-YYYY | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear | T <sup>6</sup> |
|                          |                       | Office <sup>3</sup>     | Number <sup>4</sup> | Kind Code <sup>5</sup><br>(if known) |   |   |   |                |
|                          | 16                    | JP                      | 52-85091            |                                      | Standard Oil Co.                                | 07/15/1977  |   |                |
|                          | 16                    | GB                      | 1 566 882           |                                      | Standard Oil Co.                                | 05/08/1980  |   |                |
|                          | 17                    | JP                      | 6-279030            | A                                    | Tenten et al.                                   | 10/04/1994  |   |                |
|                          | 17                    | CA                      | 2,114,681           | A1                                   | Tenten et al.                                   | 08/04/1994  |   |                |
|                          | 18                    | JP                      | 8-299797            | A                                    | Nippon Kayaku                                   | 11/19/1996  |   |                |
|                          | 19                    | JP                      | 60-33539            | B2                                   | Nippon Shokubai                                 | 08/03/1985  |   |                |
|                          | 19                    | EP                      | 0 043 100           | B2                                   | Nippon Shokubai                                 | 01/06/1982  |   |                |
|                          | 20                    | JP                      | 3-26101             | B2                                   | Mitsubishi Rayon                                | 04/09/1991  |   |                |
|                          | 21                    | JP                      | 59-12758            | A                                    | Sumitomo Kagaku                                 | 01/23/1984  |   |                |
|                          | 22                    | JP                      | 7-29056             | B2                                   | Nippon Shokubai                                 | 04/05/1995  |   |                |

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| <b>Group Art Unit</b>         |                 |
| <b>Examiner Name</b>          |                 |
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## U.S. PATENT DOCUMENTS

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**FOREIGN PATENT DOCUMENTS**

| Examiner Initials* | Cite No. <sup>1</sup> | Foreign Patent Document |                     |                                      | Name of Patentee or Applicant of Cited Document | Date of Publication of Cited Document<br>MM-DD-YYYY | Pages, Columns, Lines, Where Relevant<br>Passages or Relevant Figures Appear | T6 |
|--------------------|-----------------------|-------------------------|---------------------|--------------------------------------|---|---|--|----|
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|                    | 23                    | JP                      | 58-15176            |                                      | BASF Aktiengesellschaft                         | 03/24/1983  |  |    |
|                    | 23                    | GB                      | 1 496 832           |                                      | BASF Aktiengesellschaft                         | 01/05/1978  |  |    |
|                    | 24                    | JP                      | 62-78               | A                                    | Nippon Shokubai                                 | 01/06/1987  |  |    |
|                    | 25                    | JP                      | 10-167711           | A                                    | Nippon Shokubai                                 | 06/23/1998  |  |    |
|                    | 26                    | JP                      | 7-51573             | A                                    | Mitsubishi Chemical                             | 02/28/1995  |  |    |
|                    | 26                    | EP                      | 0 608 837           | B1                                   | Mitsubishi Chemical                             | 08/03/1994  |  |    |
|                    | 27                    | JP                      | 5-115783            | A                                    | Mitsui Toatsu                                   | 05/14/1993  |  |    |
|                    | 28                    | JP                      | 50-35088            |                                      | Chevron Research                                | 04/03/1975  |  |    |
|                    | 28                    | GB                      | 1 416 099           |                                      | Chevron Research                                | 12/03/1975  |  |    |
|                    | 29                    | JP                      | 9-316023            | A                                    | Toagosei Co Ltd                                 | 12/09/1997  |  |    |

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|                          | 30                       | JP                      | 10-57813            | A                                    | Mitsubishi Chem Corp                               | 03/03/1998   |  |                |
|                          | 31                       | JP                      | 10-120617           | A                                    | Toagosei Co., Ltd.                                 | 05/12/1998   |  |                |
|                          | 32                       | JP                      | 63-38331            | B2                                   | Mitsubishi Petrochemical                           | 07/29/1988   |  |                |
|                          | 33                       | JP                      | 53-30688            |                                      | BASF Aktiengesellschaft                            | 08/29/1978   |  |                |
|                          | 34                       | JP                      | 4-217932            | A                                    | Nippon Shokubai                                    | 08/07/1992   |  |                |
|                          | 35                       | JP                      | 9-241209            | A                                    | Nippon Shokubai                                    | 09/16/1997   |  |                |
|                          | 36                       | JP                      | 7-10802             | A                                    | Sumitomo Chem                                      | 01/13/1995   |  |                |
|                          | 37                       | JP                      | 64-33162            | U                                    | Mitsubishi Denki                                   | 03/01/1989   |  |                |
|                          | 38                       | JP                      | 3-9770              | B2                                   | Nippon Shokubai                                    | 02/12/1991   |  |                |
|                          | 39                       | JP                      | 11-333282           | A                                    | Sumitomo Chem                                      | 12/07/1999   |  |                |

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